TURNING DATA INTO KNOWLEDGE

# Nurse Employer Survey 2002

## Study Design and Methods

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## Study Design

A four page questionnaire was mailed to a variety of nurse employers in North Carolina beginning in October, 2002. Non-respondents were contacted up to three times after the initial mailing, approximately every two weeks. An additional copy of the questionnaire was included with the first and third follow-up letter. Surveys were accepted through the end of January, 2003.

## Sample of Nurse Employers

Five different industry groups that rely on nurses as an integral part of their labor force were surveyed as part of the 2002 Employer Survey: hospitals, long term care facilities, mental health hospitals and community agencies, home health care and hospice agencies, and county-level public health departments. Identified through Division of Facility Services directories for licensed health care facilities, or other sources as noted below, the entire population of organizations in each industry group was included in the study. A non-scientific sample of an additional group of employers – referred to as 'new role businesses' - was included in the study in an effort to understand the impact of new job growth for nurses outside of their traditional work places.

**Hospitals** were identified through the use of the list maintained by the Division of Facility Services (DFS) which licenses all hospital facilities in the state. In addition, we added four hospitals which are part of the Department of Defense Veterans Administration system to the sample. These hospitals, although federally owned and operated, also draw upon the nursing labor force in the state. Psychiatric hospitals were deleted from the hospital sample and were, instead, included in the mental health industry survey group.

Although a number of hospital and/or health care systems exist within the state that include two or more hospitals under their jurisdiction or management umbrella, all hospitals were surveyed individually. The designated respondent was the Vice President for Patient Care Services. In those rare cases where nurse staffing budgets were combined over two or more hospital facilities, respondents were asked to complete a survey for each facility.

All hospitals in the state, with the exceptions noted above, were included in the study and sent a survey questionnaire. The total number of hospitals included in the study was 121.

**Long Term Care** facilities were identified through a list developed and maintained by the Division of Facility Services. Every facility licensed to provide services in the state was included in the study. Although there are many chains or systems operating long term care facilities in North Carolina, most facilities are managed independently, as least in terms of their nursing staff. For that reason we asked each facility in the state to respond to the survey. In a few rare cases we were contacted by administrators that could only answer questions about budgeted positions or turnover or other demand-related questions on an aggregate basis for several different facilities. In those cases we accepted information on an aggregation of facilities by

replacing the individual facilities in the study sample with a single case under the name of the aggregate entity.

The **Mental Health** group of nurse employers is a sample of a variety of different types of mental health facilities. We started with the list of mental health facilities used in the 2000 Employer Survey study which was the result of employers named by approximately half of all RNs and LPNs practicing in the state in 1999. Addresses were updated using directories published by the NC Division of Facility Services in 2002.

The 2000 sample included some group homes and intermediate care facilities for the mentally retarded (ICF/MR). These were retained for the 2002 survey, but no new cases were added. If a facility from the 2000 sample was not found in any of the 2002 DFS directories it was deleted from the mental health sample list for the 2002 study.

Finally, six behavioral health centers located within hospitals or hospital systems were removed from our 2002 sample based on the assumption that the facility staffing would be included under the general hospital staffing plans and would be incorporated into the hospital survey results by the hospital respondents. In order to ensure that this was the case, hospitals were instructed to include these behavioral health centers in their staffing estimates.

The final mental health organization sample included a total of 98 agencies or facilities, as follows:

| | |
|---|---|
| 3 | Alcohol and Drug Abuse Treatment Centers (ADATC) |
| 38 | Regional Mental Health/Developmental Disability/ and Substance Abuse Services Programs |
| 5 | Mental Retardation Centers |
| 4 | Public Psychiatric Hospitals |
| 6 | Private Psychiatric Hospitals |
| 2 | Schools for the Emotionally Disturbed |
| 1 | Special In-patient facility for older adults |
| 39 | Intermediate care facilities for the mentally retarded |

**Home Health and Hospice** agencies included in the 2002 Survey of Nurse Employers were required to be Medicare certified. However, identifying geographically independent agencies by their Medicare certification number presents some unique problems. Agencies can be one of three types: 1) Parent – has its own Medicare provider/certification number; 2) Branch – which uses its parent's provider number and name; 3) Subunit – which is located too far (geographically) from parent to use the parent's provider number, so it has a unique Medicare certificate number, but uses the same name. The list of home health agencies published by the NC Division of Facility Services did not provide an exhaustive list of all parent, branch and subunit locales. Instead we used the membership list of the North Carolina Association for Home and Hospice Care (NCAHHC) which was more inclusive for privately owned agencies. In addition, the Association was able to provide us the names and locations of additional privately owned home care agencies that they knew were not a part of their membership. By cross-checking the NCAHHC membership list with the DFS list we were able to identify the widest range of home health care agencies.

For hospice agencies, the largest trade organization for free-standing agencies in the state is the Center for End-of-Life Care. Their membership list was used to identify privately owned hospice facilities to include in the study.

Finally, some publicly funded health departments also provide home health and/or hospice services in their service delivery area. We asked public health departments that provided such services to fill out two separate questionnaires: one for their home health and hospice staff and another for all other public health nursing personnel. In most cases, the home health and hospice service areas had a Director of Nursing that was different from that for all other public health nursing personnel and so unique respondents were available for the two questionnaires.

For home health and hospice services that are provided by hospitals, it proved too difficult for respondents to separate nursing personnel budgets and demand estimates for just this group. As a result, any estimate of demand for home health or hospice experienced personnel in hospitals that provide such services are found in the hospital industry group sample and not in the home health and hospice sample.

In some cases we were notified by agency owners that it was not possible to provide budget numbers and demand estimates for nursing personnel in geographically separate offices because all such data was centralized. In those cases we accepted information on an aggregation of facilities by replacing the individual facilities in the study sample with a single case under the name of the aggregate entity.

The total number of home health agencies and hospice care agencies included in the study was 304.

**Public Health Departments** which operate at the county level were also included in the study. We used the 'white pages' of the 2002 Directory of Nurses Employed in Local Health Departments in North Carolina, published by NC Department of Health and Human Services, to identify each facility location (some health departments operate in multiple locations) and the Director of Nursing at each location.

There are a few regional district conglomerates that organize and administer multiple county health departments. We contacted each and asked whether the separate facilities would be able to answer our questions for their facility alone. If the answer was yes, we sent a questionnaire to each facility. If the answer was no, we sent the set of questionnaires to the district office responsible for those facilities and asked that they be filled out separately if possible. (It was important to keep the data as disaggregated as possible so that when regional analyses were performed we could clearly define which counties – and thus which facilities – were assigned to particular regions.) In one case, the regional district could not disaggregate the data for multiple county health departments and the result in that case was to remove the separate health departments from the sample list and replace them with a single case for the district office.

The total number of health departments included in the study was 97.

**New Role Businesses** - In an effort to understand the growing job market for nurses in our state, we developed a convenience sample of businesses operating in the state that are known to have created new roles for nurses. Several different types of businesses were included in this group. We used the sources listed below to develop a sampling list. These sources contain many more facilities than were included in our sampling list. Only those organizations that we could determine directly employ nurses, either through web site review and/or phone calls to human resource departments, were included in the final list.

- HMOs and PPOs, found in the 2002 Managed Care Plan Consumer Guide: A Comparison of HMO and PPO Plans in North Carolina, published by the NC Dept. of Insurance and downloaded from http://www.ncdoi.com/Consumer/Publications.asp (choose "Health Insurance and Managed Care" from the drop down box).

- Utilization Review & Case Management (most of those included in the 2002 sample list were carried over from the 2000 Employer Survey)

- Contract/Clinical Research Organizations – the source for this list was the list published by http://www.ncbiotech.com/ of all types of contract research organizations in NC. Each company was researched on the web or by phone and only those that specifically noted human clinical trials as part of their business model were retained.

The final sampling list contained 35 contract research organizations, 14 case managements organizations, and 14 HMOs, PPOs or insurance companies for a total of 63 organizations.

## Response Rates

Response rates varied by industry group. The table below reports the final response rates. In addition, the third column reports the number of cases in each industry group that were not deliverable (bad addresses or the company had gone out of business) or how the number of cases changed in response to employers needing to aggregate multiple facilities into a single questionnaire. This number effectively reduces the size of the original sample group and is taken into account when calculating response rates.

| Industry Group | # of Surveys Sent Out | # of non-deliverables/ aggregations | # of Surveys Returned | Adjusted Response Rate [1] |
|---|---|---|---|---|
| Hospitals | 121 | 0 | 67 | 55% |
| Long Term Care | 380 | 3 | 98 | 26% |
| Home Health / Hospice | 304 | 54 | 129 | 52% |
| Mental Health | 107 | 9 | 58 | 59% |
| Public Health | 97 | 5 | 70 | 76% |
| New Role Businesses | 63 | 19 [2] | 13 | 30% |

[1] The response rate is adjusted by subtracting the number of non-deliverables from the total number of surveys sent out before calculating the response rate.

[2] *A number of new role businesses responded by returning blank surveys and a note that said they did not currently employ nurses or that those that were employed were not required to be a nurse as part of the job description.*

## Bias Analysis

Due to the low response rates in some of the industry groups, we conducted a bias analysis to determine if our respondents were significantly different from non-respondents in terms of their geographic location in the state or their metropolitan status. In the case of hospitals we also had information about staffed beds for both respondents and non-respondents and could make that comparison as well.

Respondent and non-respondent cases were assigned to their respective regional groups (see the section below for how geographic regions in the state and metropolitan status were defined). A 95% confidence interval was computed around the proportion of respondents in the Eastern region and this was compared to the confidence interval around the proportion of non-respondents located in the Eastern region. This was repeated for the Central and Western regions. A similar procedure was followed to test for difference by metropolitan status. And for hospitals, cases were assigned to four categories based on the number of staffed beds (< 101, 101 – 250, 251 – 400, > 400). The staffed beds information was provided by the NC Hospital Association from their 2002 membership information.

The results of the bias analysis showed no statistically significant differences between the organizations that responded to the survey and those that did not in terms of their geographic regional location, location in a metropolitan area, or – in the case of hospitals – in their size as measured by the number of staffed beds.

## Regional and Metropolitan Definitions

Three regions of the state have been defined for analysis purposes, based on Area Health Education Center (AHEC) service areas. The Western region includes all of the counties served by the Mountain and Northwest AHEC. The Central part of the state includes all of the counties served by the Charlotte, Greensboro and Wake AHECs. The Eastern region includes all of the counties served by the Area L, Coastal, Eastern and Southern Regional AHECs. The table below lists each region, their AHEC constituents, and the counties served by each AHEC.

| Region | AHEC | County Name | Metropolitan Status (1993 OMB definition) |
|---|---|---|---|
| *Central* | Charlotte | Anson | Non-metropolitan |
| *Central* | Charlotte | Cabarrus | Metropolitan |
| *Central* | Charlotte | Cleveland | Non-metropolitan |
| *Central* | Charlotte | Gaston | Metropolitan |
| *Central* | Charlotte | Lincoln | Metropolitan |
| *Central* | Charlotte | Mecklenburg | Metropolitan |
| *Central* | Charlotte | Rutherford | Non-metropolitan |
| *Central* | Charlotte | Stanly | Non-metropolitan |
| *Central* | Charlotte | Union | Metropolitan |
| *Central* | Greensboro | Alamance | Metropolitan |
| *Central* | Greensboro | Caswell | Non-metropolitan |
| *Central* | Greensboro | Chatham | Metropolitan |

| Region | AHEC | County Name | Metropolitan Status (1993 OMB definition) |
|---|---|---|---|
| *Central* | Greensboro | Guilford | Metropolitan |
| *Central* | Greensboro | Montgomery | Non-metropolitan |
| *Central* | Greensboro | Orange | Metropolitan |
| *Central* | Greensboro | Randolph | Metropolitan |
| *Central* | Greensboro | Rockingham | Non-metropolitan |
| *Central* | Wake | Durham | Metropolitan |
| *Central* | Wake | Franklin | Metropolitan |
| *Central* | Wake | Granville | Non-metropolitan |
| *Central* | Wake | Johnston | Metropolitan |
| *Central* | Wake | Lee | Non-metropolitan |
| *Central* | Wake | Person | Non-metropolitan |
| *Central* | Wake | Vance | Non-metropolitan |
| *Central* | Wake | Wake | Metropolitan |
| *Central* | Wake | Warren | Non-metropolitan |
| *East* | Area L | Edgecombe | Metropolitan |
| *East* | Area L | Halifax | Non-metropolitan |
| *East* | Area L | Nash | Metropolitan |
| *East* | Area L | Northampton | Non-metropolitan |
| *East* | Area L | Wilson | Non-metropolitan |
| *East* | Coastal | Brunswick | Metropolitan |
| *East* | Coastal | Columbus | Non-metropolitan |
| *East* | Coastal | Duplin | Non-metropolitan |
| *East* | Coastal | New Hanover | Metropolitan |
| *East* | Coastal | Pender | Non-metropolitan |
| *East* | Eastern | Beaufort | Non-metropolitan |
| *East* | Eastern | Bertie | Non-metropolitan |
| *East* | Eastern | Camden | Non-metropolitan |
| *East* | Eastern | Carteret | Non-metropolitan |
| *East* | Eastern | Chowan | Non-metropolitan |
| *East* | Eastern | Craven | Non-metropolitan |
| *East* | Eastern | Currituck | Metropolitan |
| *East* | Eastern | Dare | Non-metropolitan |
| *East* | Eastern | Gates | Non-metropolitan |
| *East* | Eastern | Greene | Non-metropolitan |
| *East* | Eastern | Hertford | Non-metropolitan |
| *East* | Eastern | Hyde | Non-metropolitan |
| *East* | Eastern | Jones | Non-metropolitan |
| *East* | Eastern | Lenoir | Non-metropolitan |
| *East* | Eastern | Martin | Non-metropolitan |
| *East* | Eastern | Onslow | Metropolitan |
| *East* | Eastern | Pamlico | Non-metropolitan |
| *East* | Eastern | Pasquotank | Non-metropolitan |
| *East* | Eastern | Perquimans | Non-metropolitan |
| *East* | Eastern | Pitt | Metropolitan |
| *East* | Eastern | Tyrrell | Non-metropolitan |

| Region | AHEC | County Name | Metropolitan Status (1993 OMB definition) |
|---|---|---|---|
| *East* | Eastern | Washington | Non-metropolitan |
| *East* | Eastern | Wayne | Metropolitan |
| *East* | Southern Regional | Bladen | Non-metropolitan |
| *East* | Southern Regional | Cumberland | Metropolitan |
| *East* | Southern Regional | Harnett | Non-metropolitan |
| *East* | Southern Regional | Hoke | Non-metropolitan |
| *East* | Southern Regional | Moore | Non-metropolitan |
| *East* | Southern Regional | Richmond | Non-metropolitan |
| *East* | Southern Regional | Robeson | Non-metropolitan |
| *East* | Southern Regional | Sampson | Non-metropolitan |
| *East* | Southern Regional | Scotland | Non-metropolitan |
| *West* | Mountain | Buncombe | Metropolitan |
| *West* | Mountain | Cherokee | Non-metropolitan |
| *West* | Mountain | Clay | Non-metropolitan |
| *West* | Mountain | Graham | Non-metropolitan |
| *West* | Mountain | Haywood | Non-metropolitan |
| *West* | Mountain | Henderson | Non-metropolitan |
| *West* | Mountain | Jackson | Non-metropolitan |
| *West* | Mountain | Macon | Non-metropolitan |
| *West* | Mountain | Madison | Metropolitan |
| *West* | Mountain | McDowell | Non-metropolitan |
| *West* | Mountain | Mitchell | Non-metropolitan |
| *West* | Mountain | Polk | Non-metropolitan |
| *West* | Mountain | Swain | Non-metropolitan |
| *West* | Mountain | Transylvania | Non-metropolitan |
| *West* | Mountain | Yancey | Non-metropolitan |
| *West* | Northwest | Alexander | Metropolitan |
| *West* | Northwest | Alleghany | Non-metropolitan |
| *West* | Northwest | Ashe | Non-metropolitan |
| *West* | Northwest | Avery | Non-metropolitan |
| *West* | Northwest | Burke | Metropolitan |
| *West* | Northwest | Caldwell | Metropolitan |
| *West* | Northwest | Catawba | Metropolitan |
| *West* | Northwest | Davidson | Metropolitan |
| *West* | Northwest | Davie | Metropolitan |
| *West* | Northwest | Forsyth | Metropolitan |
| *West* | Northwest | Iredell | Non-metropolitan |
| *West* | Northwest | Rowan | Metropolitan |
| *West* | Northwest | Stokes | Metropolitan |
| *West* | Northwest | Surry | Non-metropolitan |
| *West* | Northwest | Watauga | Non-metropolitan |
| *West* | Northwest | Wilkes | Non-metropolitan |
| *West* | Northwest | Yadkin | Metropolitan |

This study uses the federal Office of Management and Budget definition of rurality which classifies counties on the basis of population size and degree of integration with large cities. The standard definition of a metropolitan area, issued in 1993, says that a metropolitan area must include at least:

- one city with 50,000 or more inhabitants, or
- a Census Bureau-defined urbanized area of at least 50,000 inhabitants and a total metropolitan population of at least 100,000.

Under these standards, the county that contains the largest city becomes the central county of a metropolitan area and any adjacent counties that have at least 50% of their population in an urban area surrounding the largest city are also part of that metropolitan area. Additional outlying counties may also be included in the metropolitan area if a substantial proportion of the employed people in that county commute to the central place. (see Definitions of rural: A Handbook for Health Policy Makers and Researchers by Thomas C. Ricketts, et al., 1998, for a more detailed discussion of how rural and metropolitan areas are defined for policy purposes. This document can be accessed at: http://www.shepscenter.unc.edu/research_programs/Rural_Program/ruralit.pdf )

The table above includes the metropolitan status of each county in North Carolina according to the standard definition and based on 1990 census results. Newer designations of metropolitan area utilizing the 2000 census results were not available at the time of this study.